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EXAMINER

FLORES, LEON

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/584,738	<b>Applicant(s)</b> KAKURA, YOSHIKAZU	
	<b>Examiner</b> LEON FLORES	<b>Art Unit</b> 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 22 February 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 10-17, 22-29 and 34-37 is/are rejected.
- 7) ☒ Claim(s) 6-9, 18-21 and 30-33 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Response to Arguments***

1. Applicant's arguments with respect to claims (1-37) have been considered but are moot in view of the new ground(s) of rejection.

Applicant asserts that *"the Background Art section of the subject application does not teach a plurality of unique hopping patterns are generated for each transmitter, wherein each transmitter generates and transmits a plurality of transmission signals by using the plurality of hopping patterns"*.

The examiner respectfully disagrees. Applicant is reminded that **MPEP 2145** states:

*Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. In re Van Geuns, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).*

Based on the claim language "the correspondence is different for each transmission signal", the background of invention (hereinafter AAPA) discloses a hopping pattern generator for producing a hopping pattern  $S_{HP1}$  unique to the transmitter. (See ¶ 15) Each of the transmitters transmit a plurality of transmission signals using a different hopping pattern.

### ***Claim Rejections - 35 USC § 101***

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claim 37 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 37 is directed to software per se.

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**MPEP 2106 states:**

*Since a computer program is merely a set of instructions capable of being executed by a computer, the computer program itself is not a process and USPTO personnel should treat a claim for a computer program, without the computer-readable medium needed to realize the computer program's functionality, as nonstatutory functional descriptive material.*

*Nonfunctional descriptive material that does not constitute a statutory process, machine, manufacture, or composition of matter and should be rejected under 35 U.S.C. 101.*

*Certain types of descriptive material, such as music, literature, art, photographs, and mere arrangements or compilations of facts or data, without any functional interrelationship is not a process, machine, manufacture, or composition of matter.*

*USPTO personnel should be prudent in applying the foregoing guidance. Nonfunctional descriptive material may be claimed in combination with other functional descriptive multi-media material on a computer-readable medium to provide the necessary functional and structural interrelationship to satisfy the requirements of 35 U.S.C. 101.*

*The presence of the claimed nonfunctional descriptive material is not necessarily determinative of nonstatutory subject matter. For example, a computer that recognizes a particular grouping or sequence of musical notes read from memory and thereafter causes another defined series of notes to be played, requires a functional interrelationship among that data and the computing processes performed when utilizing that data. As such, a claim to that computer is statutory subject matter because it implements a statutory process.*

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***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. **Claims (1-3, 10-15, 22-27, 34-37) are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshii Isamu et al (hereinafter Yoshii) (JP2003032226) in view of Applicant's Admitted Prior Art. (hereinafter AAPA)**

Re claim 1, Yoshii discloses a wireless communication system using a wireless communication apparatus having a plurality of transmission and reception antennas, wherein: the wireless communication apparatus comprising: correspondence determining means for determining, upon producing first through M-th (M being an integer not smaller than 2) transmission signals, correspondence between first through K-th (K being an integer not smaller than 2) transmission sequences and frequency channels (See fig. 1); and extracting and combining means for extracting and combining, upon producing first through K-th demodulated sequences, M demodulated

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signals corresponding to the first through the K-th transmission sequences in accordance with the correspondence between the first through the K-th transmission sequences and the frequency channels. (See fig. 2)

But the reference of Yoshii fails to explicitly teach that the correspondence is different for each transmission signal.

However, AAPA does. (See figs. 4-5: ¶s 15 & 18) AAPA discloses that the correspondence is different for each transmission signal. (¶ 15 “hopping pattern generator produces a hopping pattern  $S_{HP1}$  unique to the transmitter” & ¶ 18 “hopping pattern generator produces unique hopping patterns  $S_{HP1}$  to  $S_{HPK}$  corresponding to the transmitters in figure 4”) Each of the transmitters transmit a plurality of transmission signals using a different hopping pattern.

Therefore, taking the combined teaching of Yoshii and AAPA as a whole, it would have been obvious to one of ordinary skills in the art to incorporate this feature into the system of Yoshii, in the manner as claimed and as taught by AAPA, for the benefit of generating a unique hopping pattern for each transmission sequence.

Re claim 2, the combination of Yoshii & AAPA further teach that wherein: the correspondence determining means comprises: a transmitting portion including coded sequence producing means for encoding first through K-th transmission sequences to produce first through K-th coded sequences, respectively (In AAPA, see fig. 4: 81), interleaved sequence producing means for interleaving the first through the K-th coded sequences to produce first through K-th interleaved sequences, respectively (In AAPA,

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see fig. 4: 82), partial transmission sequence producing means for dividing each of the first through the K-th interleaved sequences into first through M-th partial transmission sequences (In AAPA, see fig. 4: 83), transmission signal producing means for frequency-multiplexing the first through the M-th partial transmission sequences corresponding to each of the first through the K-th transmission sequences with respect to each of the first through the M-th partial transmission sequences to produce first through M-th transmission signals, and first through M-th transmission antennas for transmitting the first through the M-th transmission signals, respectively. (In AAPA, see fig. 4: 93-94)

Re claim 3, the combination of Yoshii & AAPA further teach that wherein:the extracting and combining means comprises a receiving portion including first through N-th (N being an integer not smaller than 1) reception antennas (In AAPA, see fig. 5: 10), demodulating means for decomposing first through N-th reception signals received by the first through the N-th reception antennas into first through M-th partial demodulated signals for each frequency channel (In AAPA, see fig. 5: 110), demodulated sequence producing means for extracting and combining, from the first through the M-th partial demodulated signals for each frequency channel, M demodulated signals corresponding to each of the first through the K-th transmission sequences to thereby produce first through K-th demodulated sequences (In AAPA, see fig. 5: 110), deinterleaved sequence producing means for deinterleaving the first through the K-th demodulated sequences to produce first through K-th deinterleaved sequences, respectively (In

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AAPA, see fig. 5: 112), and decoding means for decoding the first through the K-th deinterleaved sequences to produce first through K-th decoded sequences, respectively. (In AAPA, see fig. 5: 113)

Re claim 10, the combination of Yoshii & AAPA further teach that wherein OFDM (Orthogonal Frequency Division Multiplex) is used as a wireless transmission method and frequency multiplexing is realized by multiplexing subcarriers. (In Yoshii, see fig. 1)

Re claim 11, the combination of Yoshii & AAPA further teach that wherein: the transmission signal producing means determines, upon producing the first through the M-th transmission signals, correspondence between the first through the K-th transmission sequences and the frequency channels by the use of a different frequency hopping pattern for each transmission signal (In AAPA, see fig. 4: 86); the demodulated sequence producing means extracting and combining, upon producing the first through the K-th demodulated sequences, M demodulated signals corresponding to each of the first through the K-th transmission sequences in accordance with the different hopping pattern for each transmission signal in the transmission signal producing means. (In AAPA, see fig. 5: 107)

Re claim 12, the combination of Yoshii & AAPA further teach that wherein a frequency hopping pattern such that frequency channels corresponding to an i-th ( $i=1,$



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2, . . . , K) transmission sequence are completely orthogonal among the first through the M-th transmission signals. (In AAPA, see fig. 4: 86)

Claim 13 has been analyzed and rejected w/r to claim 1 above.

Claim 14 has been analyzed and rejected w/r to claim 2 above.

Claim 15 has been analyzed and rejected w/r to claim 3 above.

Claim 22 has been analyzed and rejected w/r to claim 10 above.

Claim 23 has been analyzed and rejected w/r to claim 11 above.

Claim 24 has been analyzed and rejected w/r to claim 12 above.

Claim 25 is a method claim corresponding to system claim 1. Hence, the steps performed in method claim 25 would have necessitated the elements in system claim 1. Therefore, claim 25 has been analyzed and rejected w/r to claim 1 above.

Claim 26 is a method claim corresponding to system claim 2. Hence, the steps performed in method claim 26 would have necessitated the elements in system claim 2. Therefore, claim 26 has been analyzed and rejected w/r to claim 2 above.

Claim 27 is a method claim corresponding to system claim 3. Hence, the steps performed in method claim 27 would have necessitated the elements in system claim 3. Therefore, claim 27 has been analyzed and rejected w/r to claim 3 above.

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Claim 34 is a method claim corresponding to system claim 10. Hence, the steps performed in method claim 34 would have necessitated the elements in system claim 10. Therefore, claim 34 has been analyzed and rejected w/r to claim 10 above.

Claim 35 is a method claim corresponding to system claim 11. Hence, the steps performed in method claim 35 would have necessitated the elements in system claim 11. Therefore, claim 35 has been analyzed and rejected w/r to claim 11 above.

Claim 36 is a method claim corresponding to system claim 12. Hence, the steps performed in method claim 36 would have necessitated the elements in system claim 12. Therefore, claim 36 has been analyzed and rejected w/r to claim 12 above.

Claim 37 has been analyzed and rejected w/r to claim 1 above.

**7. Claims (4-5, 16-17, 28-29) are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshii Isamu et al (hereinafter Yoshii) (JP2003032226) and Applicant's Admitted Prior Art (hereinafter Prior art), as applied to claims 1, 13, 25 & 37 above, and further in view of Ue et al. (hereinafter Ue) (US Patent 6,611,676 B2)**

Re claim 4, the combination of Yoshii and AAPA fails to teach that wherein the transmitting portion comprises scheduling means for reducing the number of transmission sequences when a reception quality at the receiving portion is lower than a

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predetermined first threshold and for increasing the number of transmission sequences when the reception quality is higher than a predetermined second threshold.

However, Ue does. (See figs. 1-2) Ue discloses that wherein the transmitting portion comprises scheduling means for reducing the number of transmission sequences when a reception quality at the receiving portion is lower than a predetermined first threshold (See col. 7, lines 4-8) and for increasing the number of transmission sequences when the reception quality is higher than a predetermined second threshold. (See col. 7, lines 30-35)

Therefore, taking the combined teaching of Yoshii, AAPA & Ue as a whole, it would have been obvious to one of ordinary skills in the art to incorporate this feature into the system of Yoshii, as modified by AAPA, in the manner as claimed and as taught by Ue, for the benefit of enhancing the effect of switching the transmission rate. (See col. 7, lines 24-25)

Re claim 5, the combination of Yoshii, AAPA & Ue further teach that wherein the scheduling means reduces the number of transmission sequences successively from the transmission sequence for which the reception quality at the receiving portion for each transmission sequence is low. (In Ue, see col. 7, lines 4-8)

Claims (16-17) have been analyzed and rejected w/r to claims (4-5), respectively.

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Claim 28 is a method claim corresponding to system claim 4. Hence, the steps performed in method claim 28 would have necessitated the elements in system claim 4. Therefore, claim 28 has been analyzed and rejected w/r to claim 4 above.

Claim 29 is a method claim corresponding to system claim 5. Hence, the steps performed in method claim 29 would have necessitated the elements in system claim 5. Therefore, claim 29 has been analyzed and rejected w/r to claim 5 above.

### ***Allowable Subject Matter***

8. Claims (6-9, 18-21, 30-33) are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Contact***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEON FLORES whose telephone number is (571)270-1201. The examiner can normally be reached on Mon-Fri 7-5pm Alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Leon Flores/  
Examiner, Art Unit 2611  
May 10, 2010